CHAPTER SPS 345
Mechanical Refrigeration

Subchapter 1

Purpose Scope and Application

Purpose and Scope

- **(1)** Minimum safety standards for the design, construction, installation, operation, testing, maintenance and inspection of mechanical refrigeration systems in public buildings and places of employment.
- **(2)** Minimum standards for preventing the release of ozone-depleting refrigerants to the atmosphere.

Application

- **(1)** GENERAL. This chapter applies to all of the following except as provided in sub. (2):
- (a) All mechanical refrigeration systems that are installed or constructed on or after the effective date of this rule.
- (b) A change to a refrigerant of a different number designation.
- (c) Replacement parts or components for any mechanical refrigeration system that exists on or after the effective date of this rule.
- (d) Alterations to any mechanical refrigeration system that exists on or after the effective date of this rule.

Application Contd.

- (e) Repaired portions or components of any mechanical refrigeration system that exists on or after the effective date of this rule.
- (f) Operation, testing, maintenance and inspection of all mechanical refrigeration systems that exist on or after the effective date of this rule.
- (g) Any removal, transfer, storage, release, recovery, charging or other use of any ozone-depleting refrigerant that exists in Wisconsin on or after the effective date of this rule.

Application Contd.

- **(2)** EXEMPTIONS. This chapter does not apply to the use of water or air as the primary refrigerant.
- **(3)** RETROACTIVITY. A design, construction or installation rule in subchapters III to VI does not apply retroactively to mechanical refrigeration systems or components existing prior to the effective date of the rule unless specifically stated in the rule.

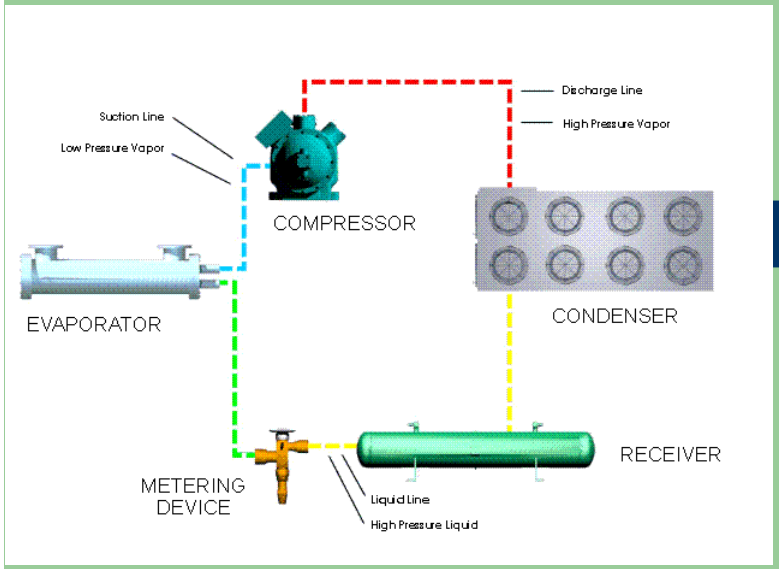
Application Contd.

- **(4)** DIFFERING RULES.
  - (a) Where any department-written rule in this chapter differs from a requirement within a standard referenced in this chapter, the department-written rule shall govern.
  - (b) Where a rule prescribes a general requirement and another rule prescribes a specific or more detailed requirement regarding the same subject, the specific or more detailed requirement shall govern, except as provided in par. (a).
  - (c) Where different sections of this chapter specify conflicting requirements, the most restrictive requirement, as determined by the department, shall govern, except as provided in pars. (a) and (b).
- **(5)** INTERPRETATIONS. Under s. 101.02 (1), Stats., the department reserves the right to interpret the requirements in this chapter and in all adopted codes and standards.

Application Contd.

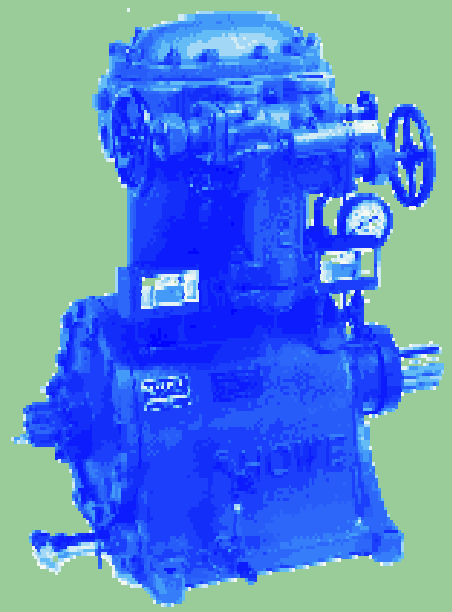
- **SPS 345.12 Local regulations.** This chapter does not limit the power of cities, villages and towns to make or enforce additional or more stringent regulations, provided the regulations do not conflict with this chapter, any other rule of the department, or law.

CHAPTER SPS 345
Mechanical Refrigeration



Subchapter II
Definitions

CHAPTER SPS 345
Mechanical Refrigeration



Subchapter III

Administration and Enforcement

SPS 345.30 Administration and Enforcement

- **(1)** CLASSIFICATIONS. Any installation of the following mechanical refrigeration systems or components thereof shall be registered with the department
  - (a) Any system using a Group A1 or B1 refrigerant and having a capacity rated at or greater than 50 horsepower, 50 tons or 50,000 volt–amperes.
  - (b) Any system using a Group A2, B2, A3 or B3 refrigerant and having a capacity rated at or greater than 10 horsepower, 10 tons or 10,000 volt–amperes.
  - (c) Any alteration of a mechanical refrigeration system that causes the system to have or exceed the capacity in par. (a) or (b)
  - (d) Any alteration or repair of a currently registered mechanical refrigeration system

SPS 345.30 Cont'd

- **(2)** FORMS. Registration information shall be submitted on form SBD-34.
- **(3)** SUBMITTAL DEADLINE.
  - (a) The registration form shall be submitted to the department at least 20 business days before the system is initially placed in operation.
  - (b) A registration form shall be submitted to the department at least 20 business days before a system is reactivated after an alteration, repair or replacement.

Mechanical Refrigeration Installation Registration

State of Wisconsin
Department of Safety and Professional Services
Safety and Buildings Division

Complete appropriate portions

Installing contractor shall distribute copies as follows:

White - Safety and Buildings Division, Box 7302, Madison, Wisconsin 53707-7302

Yellow - Send to owner who shall POST IT IN A CONSPICUOUS PLACE.

Pink - Retain for file.

Refrigeration Systems

Type ☐ Self ☐ Direct ☐ Indirect

Use ☐ Air Cond. ☐ Mfg. or Storage ☐ Recr.

Capacity: Tons | HP | KVA

User or Owner Name	Email	Refrigerant #	Pounds in System	Serial No.
Street Address	Phone number	Distribution Piping: ☐ Steel ☐ Copper ☐ Other	Connections: ☐ Welded ☐ Brazed ☐ Soldered ☐ Threaded	
City	State / Zip	WI Registration Tag No.	HVAC Contractor # Required: Number, Expiration Date	
Installing Contractor Name	Street Address / City / State / Zip Code			
Date Installation Completed	Contractor Telephone / Email	Installer Signature	Date Registered	

Personal information you provide may be used for secondary purposes [Privacy Law, s.15.04 (1) (m)].

SBD-34-E (R11/11)

FORMS ARE AVAILABLE ON THE WEB @
http://www.dsps.state.wi.us/SB/SB–DivForms

SPS 345.31 Enforcement and inspections

- **(1)** ENFORCEMENT.
  - (a) This chapter shall be enforced by the department and its authorized agents.
  - (b) Where an authorized agent administers and enforces this chapter in conjunction with the department, the authorized agent's administration and enforcement shall be exercised in advance of the department's administration and enforcement.
- **(2)** INSTALLATION INSPECTION.
  - (a) The authorized agent or the department shall inspect a mechanical refrigeration system that is required to be registered under s. SPS 345.30 (1), within 45 business days after completion of the initial construction or installation, and within 45 business days after completion of construction or installation relating to any alteration, repair or replacement.

SPS 345.31 cont'd

- (b)
- 1. All refrigerant steel piping that will employ welded joints shall be inspected by the authorized agent or the department after the piping material is delivered to the job site and prior to installation of the piping.
- 2. The authorized agent or the department shall be given a minimum of 5 business days notice prior to the start of construction to arrange for inspections under this paragraph.
- 3. If applicable and if required by the authorized agent or the department, the following documents shall be made available for review during inspections under this paragraph:

SPS 345.31 cont'd

- ✓ a. Welding procedure specification.
- ✓ b. Procedure qualification record.
- ✓ c. Welder performance qualification.
- ✓ d. Welder continuity record.
- ✓ e. Design calculations.
- ✓ f. Design plans for the piping system.
- ✓ g. Material test reports.
- ✓ h. Certificates of compliance.

- 4. Form SBD-5204 shall be completed and be retained at the job site for reference during inspections under this paragraph. If the design of the piping is acceptable, the authorized agent or the department shall sign the form.

Power Piping / Welded Refrigeration Piping Installation Registration

Safety and Buildings Division
Inspection and Safety Support
P O Box 7302
Madison WI 53707-7302

Personal information you provide may be used for secondary purposes [Privacy Law s.15.04 (1) (m)].

Check type of system being installed: ☐ Power Piping ☐ Welded Refrigeration Piping

System Description: Include pipe sizes, total length of pipe welded and purpose of system (example: main steam, refrigerant etc.)

☐ New ☐ Replacement ☐ Modification (Refrigeration system design to) - ☐ ASHRAE-15 2007 ☐ ANSI/IIAR-2 2008

User or Owner's Name		Installing Contractor's Name	
Street Address		Street Address	
City, State, Zip Code		City, State, Zip Code	
Telephone #	e-mail	Telephone #	e-mail
Installation Designed By		Certified Inspector Signature	
		Employed By	
In Accordance With Natl. Std.# ☐ ANSI / ASME B 31.1 ☐ ANSI / ASME B 31.5		Date Inspected	State/N.B.-Cert. ID. #

Maximum Design Pressure and Temperature of Piping System . . . . . _____

Minimum Design Metal Temperature of Piping System . . . . . _____

Test Pressure Applied. . . . . Refrigeration: *High Side* _____ *Low Side* _____ Steam Piping: _____

Test Type: ☐ Hydrostatic ☐ Pneumatic ☐ Other _____ **Date Tested** . . . . . _____

I certify this system was installed and tested in accordance with Wisconsin Administrative Code SPS 341/345 as applicable

Date Installation Completed	Installer's Signature and Title	For DSPS Use Only Date Installation Registered

Installer must prepare this document and maintain on job site until completion of fabrication.

Distribute as follows: Send original copy to Safety and Buildings Division (address above) - Send one to Owner - Retain one for your File.

Form can be downloaded from the Web Site" http://dsps.wi.gov/sb/SB-DivForms.html#boilers

SBD-5204-F (R11/11)

FORMS ARE AVAILABLE ON WEB @ http://www.commerce.state.wi.us/SB/SB–DivForms

SPS 345.31 cont'd

- (c) Welded, prefabricated steel piping that is part of a mechanical refrigeration system to be erected on a job site shall be inspected at the fabrication shop by the authorized agent or the department – or, for out-of-state fabricators, by an inspector commissioned by the national board of boiler and pressure vessel inspectors. The fabricator shall make a copy of the inspection report or a copy of the completed form SBD-5204 available to the installer at the job site verifying that the prefabricated piping complies with ASME B31.5. Design calculations for the prefabricated piping shall be provided to the authorized agent or the department if so requested.

SPS 345.31 cont'd

- **(3)** PERIODIC INSPECTIONS.
- (a) 1. Except as provided in subd. 2., any mechanical refrigeration system using a Group A1 or B1 refrigerant and having a capacity rated at or greater than 50 horsepower, 50 tons or 50,000 volt-amperes shall be inspected by the authorized agent or the department at least once every 36 months.
- 2. a. Mechanical refrigeration systems containing a Group A1 or B1 refrigerant which are used only for air conditioning for human occupancy and which have their mechanical components located outdoors with the discharge from any relief valve located at least 20 feet from any building opening are exempt from periodic inspections.

  b. An air intake opening that is part of an outdoor self-contained system under subd. 2. a. is not considered a building opening for the purposes of this subdivision.

SPS 345.31 cont'd

- (b) Any mechanical refrigeration system using a Group A2, B2, A3 or B3 refrigerant and having a capacity rated at or greater than 10 horsepower, 10 tons or 10,000 volt-amperes shall be inspected by the authorized agent or the department at least once every 12 months.

SPS 345.32 Permit to Operate.

- **(1)** (a)
  - 1. Within 5 business days after completing an inspection the authorized agent or the department shall determine whether the mechanical refrigeration system complies with the applicable requirements of this chapter.
  - 2. For each inspection performed by an authorized agent, a report shall be sent to the department in accordance with the department's electronic data interchange transfer guidelines, within 5 business days after completing the inspection, unless additional time is authorized by the department.
  - (b) Within 10 business days after making or receiving the determination under par. (a), the department shall issue a permit to operate if it has been determined the refrigeration system complies with the applicable requirements of this chapter.

SPS 345.32 Permit to Operate cont'd

- **(2)** The permit to operate shall list the maximum operating pressure allowed under this chapter.
- **(3)** Permits to operate shall be valid for one of the following periods:
  - (a) Three years, for systems inspected under s. SPS 345.31 (3) (a).
  - (b) One year, for systems inspected under s. SPS 345.31 (3) (b).

SPS 345.32 Permit to Operate cont'd

- (4) (a) The owner or user of a mechanical refrigeration system that is required to have periodic inspections under s. SPS 345.31 (3) shall be responsible for all of the following:
- 1. Obtaining and maintaining a valid permit to operate each system.
- 2. Notifying the authorized agent or the department, within 20 business days thereof, if the system is placed in an inactive status, as specified in sub. (5).
- (b) 1. a. The permit to operate shall be posted in the machinery room or adjacent to the entrance to the machinery room except as provided in subds. 1. b. and 1. c.
- ✓ b. If there is no machinery room and the machinery is located within the building, the permit shall be posted in a conspicuous location on or near the machinery.
- ✓ c. If there is no machinery room and the machinery is located outside the building, the permit shall be posted in a conspicuous location near the access opening for the machinery unless otherwise approved by the authorized agent or the department.
- 2. The posted permit shall be maintained in a legible state.

SPS 345.32 Permit to Operate cont'd

- **(5)** (a) A mechanical refrigeration system may be placed in an inactive status if acceptable documentation is provided to the authorized agent or the department showing that the entire refrigerant charge has been removed from the system.
- (b) Within 5 business days after an authorized agent receives the documentation under par. (a), the agent shall verify the inactive status and report that verification to the department.
- **(6)** The owner or user shall notify the authorized agent or the department at least 20 business days before reactivating a mechanical refrigeration system at any time after the expiration date on the permit to operate. The system shall be re-inspected by the authorized agent or the department and a new permit to operate shall be obtained before the system may be reactivated.

SPS 345.33 Reporting of accidents.

- If a mechanical refrigeration system component fails and causes injuries to any person that require more than first aid treatment, the owner or user shall report the facts involved to the department within the following 24 hours. The owner or user may not remove or disturb the mechanical refrigeration system or any of its components nor permit any such removal or disturbance prior to receiving authorization from the authorized agent or the department, except for the purpose of saving human life or preventing property damage.
- **Note:** The address for reporting accidents to the Department is the Safety and Buildings Division, Inspection Support Unit, P.O. Box 7302, Madison, WI 53707-7302; and the fax number is 608-283-7499.
- **Note:** The Department can be contacted at 608-266-7548 during normal business hours. The State Division of Emergency Management can be contacted at 800-943-0003 during non-business hours.

Mechanical Refrigeration Accident Report

Safety and Buildings Division
Boiler/Pressure Vessel Safety
P.O. Box 2538
Madison, WI 53701-2538
PH: (608) 266-7548
Fax: (608) 267-9723

Personal information you provide may be used for secondary purposes [Privacy Law s.15.04 (1) (m)].

Building Name	Owners Name	Registration Tag No.
Street Address	Address	Regulated Object ID.
City, State, Zip	City, State, Zip	Manufacturer

SPS 345.10 Reporting of accidents. Whenever mechanical refrigeration equipment or system components fail and cause injury to any person, the owner or user shall report in writing the facts involved to the department within the following 24 hours. The owner or user may not remove or disturb mechanical refrigeration equipment or any of its parts nor permit any such removal or disturbance prior to receiving authorization from the department, except for the purpose of saving human life or preventing further property damage.

If an accident has occurred the department may be contacted at 608-266-7548 during normal business hours. The state Division of Emergency Management can be contacted at 800-943-0008 during non-business hours.

Name of Injured: Date of Injury: Time of Injury:

Address: City: State: Telephone:

Nature of Injury:

Did Accident Cause a Fatality: ☐ Yes ☐ No

Were Mechanical Refrigeration or Parts Moved: ☐ Yes ☐ No

Contractor / Inspector Notified: ☐ Yes ☐ No

If Yes Reason:

If Yes Name(s) and Telephone Number(s)

Describe fully how accident occurred and state what injured was doing when the accident occurred. Include attachment if necessary:

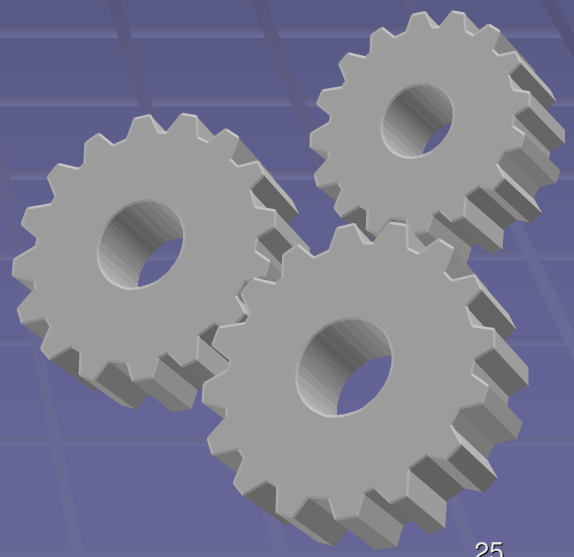
Names and Telephone Numbers of Witnesses:

Does Mechanical Refrigeration have a Permit to Operate: ☐ Yes ☐ No	Date of Last Inspection:
Name of Person Filing Report (Please Print Clearly)	Company or Firm
Signature of Person Filing Report	Date of this Report

This report must be filed with the Department of Safety and Professional Services within 24 hours of accident.

A copy of this report should be forwarded to the owner

FORMS ARE AVAILABLE ON WEB @ http://www.commerce.state.wi.us/SB/SB-DivForms



SPS 345.34 Petition for variance.

- The department shall consider and may grant a variance to a provision of this chapter in accordance with ch. SPS 303. The petition for variance shall include a position statement from the fire department having jurisdiction over the affected property, and from any authorized agent having jurisdiction.

SPS 345.35 Compliance responsibilities.

- **(1)** Any inspection report describing any noncompliance with this chapter shall be provided to the owner of the mechanical refrigeration system.
- **(2)** The owner of a mechanical refrigeration system shall correct any aspects of the system that do not comply with applicable requirements of this chapter, within any time period prescribed by the authorized agent or the department.

SPS 345.36 Appeals.

- **(1)** APPEAL OF DEPARTMENT ORDER. Pursuant to s. 101.02 (6) (e), Stats., any person who owns or occupies a property that is affected by an order of the department may petition the department for a hearing on the reasonableness of the order.
- **(2)** APPEAL OF LOCAL ORDER. Pursuant to s. 101.02 (7) (b), Stats., any person affected by a local order that is in conflict with an order of the department may petition the department for a hearing on the local order.
- **(3)** PETITION FOR ADMINISTRATIVE RULE. Pursuant to s. 227.12, Stats., any municipality, corporation or any 5 or more persons having an interest in an administrative rule may petition the department requesting the adoption, amendment or repeal of the rule.

Penalties & Fees

- **SPS 345.37 Penalties.** Penalties for violations of this chapter shall be assessed in accordance with s. 101.02 (12) and (13) (a) or 101.177 (5), Stats.
- **SPS 345.38 Fees.** Fees for permits to operate, inspections and petitions for variance shall be submitted as specified in ch. SPS 302.

CHAPTER SPS 345
Mechanical Refrigeration

Subchapter IV — Standards

SPS 345.40 Design, construction and operation.

- **(1)** ADOPTION. (a) ANSI/ASHRAE standard 15-2007 and its addenda a to i, subject to the modifications specified in subch. V, are hereby incorporated by reference into this chapter.
- (b) ANSI/IIAR 2-2008, subject to the modifications specified in subch. VI, is hereby incorporated by reference into this chapter.
- **(2)** GENERAL. (a) All mechanical refrigeration systems shall be designed, constructed, installed, operated, maintained, tested and inspected in accordance with ANSI/ASHRAE standard 15, except as otherwise provided in this chapter.
- (b) Closed-circuit ammonia mechanical refrigeration systems may be designed, constructed, installed and tested in accordance with subch. VI and ANSI/IIAR 2, in combination with ANSI/ASHRAE standard 15 sections 10.2 and 11.
- (c) Any repair or alteration to a pressure vessel in a mechanical refrigeration system shall comply with ss. Comm 41.60 to 41.64.

SPS 345.40 Design, construction and operation. Cont'd

- **(3)** SECONDARY REFERENCES. Any codes or standards referenced in the standards adopted in sub. (1) shall apply to the prescribed extent of each such reference, except as modified by this chapter.
- **(4)** ALTERNATE STANDARDS. Any alternate standard that is equivalent to or more stringent than a standard incorporated by reference or otherwise referenced under this chapter may be used in lieu of the incorporated or referenced standard if the alternate standard is accepted in writing by the department.
- **(5)** RELEASING REFRIGERANT. Release of any refrigerant to the environment shall be minimized as fully as practical.

CHAPTER SPS 345
Mechanical Refrigeration

Subchapter V — Changes, Additions or Omissions to ANSI/ASHRAE Standard 15

ASHRAE 15 Changes, Additions or Omissions

- **SPS 345.500 General.** Changes, additions or omissions to ANSI/ASHRAE standard 15 are specified in this subchapter and are rules of the department and are not requirements of ANSI/ASHRAE standard 15.
- **SPS 345.501 Scope.** The requirements of ANSI/ASHRAE standard 15 sections 1 and 2 are not included as part of this chapter.
- **SPS 345.503 Definitions.** This is a department definition for this chapter in addition to the definitions in ANSI/ASHRAE standard 15 section 3: "Authority having jurisdiction" or "jurisdiction having authority" means the department or authorized agent.

ASHRAE 15 Changes, Additions or Omissions

- SPS 345.508 Eye wash and shower. This is a department rule and informational note in addition to the requirements in ANSI/ASHRAE standard 15 section 8.12: An eye wash and body shower unit shall be located external to the machinery room and be readily accessible.

ASHRAE 15 Changes, Additions or Omissions

- SPS 345.509 Design and construction. (1) MATERIALS. This is an additional, department exception to the requirements in ANSI/ASHRAE standard 15 section 9.1.5: Discharge piping for mechanical refrigeration safety relief valves that discharges outside a building may consist of plastic materials which the department has approved specifically for this purpose, provided both of the following conditions are met:
- (a) The design pressure in the refrigeration system does not exceed 15 psi
- (b) The refrigeration system does not contain a refrigerant other than A1 or B1.
- (c) The piping is noncombustible when tested in accordance with ASTM E 136 or is self-extinguishing with a rating of 5V-A, V-O or V-1 when tested in accordance with UL 94.

ASHRAE 15 Changes, Additions or Omissions

- (2) ASME B31.3 PIPING. This is a department informational note to be used under ANSI/ASHRAE standard 15 section 9.10.1:
- Note: Process piping complying with ASME B31.3 is an example of piping that complies with this section by being appropriately listed rather than by complying with ASME B31.5.

ASHRAE 15 Changes, Additions or Omissions

- Comm 45.511 General requirements. (1) PRESSURE RELIEF VALVE REPLACEMENT. This is a department rule in addition to the requirements in ANSI/ASHRAE standard 15 section 11.6:
- (a) All pressure relief valves for any ammonia mechanical refrigeration system that exists on or after [the effective date of this rule shall be replaced in accordance with the manufacturer's recommendations and all of the following, except as provided in par. (b):
  - 1. Each valve shall be replaced within 5 years after the date of installation.
  - 2. Each valve may not be over 2 years old at the time of installation.
  - 3. A record of the valve's installation shall be maintained until the valve is replaced.
- (b) This subsection does not apply to relief devices that discharge internally to another part of a closed-loop refrigeration system.

ASHRAE 15 Changes, Additions or Omissions

- (2) PERIODIC TESTS. This is a department rule in addition to the requirements in ANSI/ASHRAE standard 15 section 11.6.3: Each of the following emergency devices and systems that exist on or after [the effective date of this rule shall be tested at least annually, and documentation of the testing shall be available onsite for inspection by the authorized agent or the department:
  - (a) Treatment and flaring systems.
  - (b) Valves and appurtenances necessary to the operation of emergency refrigeration control boxes.
  - (c) Fans and associated equipment intended to operate emergency ventilation systems.
  - (d) Refrigerant detection and alarm systems.
  - (e) Remote controls for shutdown of compressors and refrigerant pumps.

ASHRAE 15 Changes, Additions or Omissions

- **(3) REPORTABLE INCIDENTS. This is a department informational note to be used under ANSI/ASHRAE standard 15 section 11.7, paragraph c:**
- **Note:** Refrigerants typically should not be discharged except in an emergency. The Department of Natural Resources, federal agencies and local fire departments may have requirements relating to being immediately notified upon the automatic or manual discharge of specified amounts of any refrigerant.
- **Notification may not be necessary for any of the following conditions:**
- ✓ 1. Refrigeration systems operating at pressures below atmospheric and incorporating automatic purge systems.
- ✓ 2. Incidental operation of automatic pressure relief valves resulting in minor release of the refrigerant charge.
- ✓ 3. Incidental minor releases associated with service operations after system pump-down has been accomplished.

ASHRAE 15 Changes, Additions or Omissions

- **Comm 45.550 ANSI/ASME B31.5. (1)** Substitute the following wording for the requirements in ANSI/ASHRAE standard 15 normative appendix E citation 5: *ASME Boiler and Pressure Vessel Code,* Section VIII, Rules for Construction of Pressure Vessels, Division 1, 2007, The American Society of Mechanical Engineers (ASME), 3 Park Avenue, New York, NY 10016-5990.
- **(2)** Substitute the following wording for the requirements in ANSI/ASHRAE standard 15 normative appendix E citation 6: *ASME B31.5-2006, Refrigeration Piping and Heat Transfer Components,* The American Society of Mechanical Engineers (ASME), 3 Park Avenue, New York, NY 10016-5990

CHAPTER SPS 345
Mechanical Refrigeration

Subchapter VI — Changes, Additions or Omissions to ANSI/IIAR-2

IIAR-2 Changes, Additions or Omissions

- **SPS 345.600 General.** Changes, additions or omissions to ANSI/IIAR 2 are specified in this subchapter and are rules of the department and are not requirements of ANSI/IIAR 2.
  - **Note:** Under section SPS 345.40 (2) (b), closed-circuit ammonia mechanical refrigeration systems may be designed, constructed, installed and tested in accordance with ANSI/IIAR 2 and this subchapter, in combination with ANSI/ASHRAE standard 15 sections 10.2 and 11.
- **SPS 345.601 Scope**. The requirements of ANSI/IIAR 2 sections 1 and 2 are not included as part of this chapter.
  - **Note:** The sections in this subchapter are generally numbered to correspond with both the numbering of the subchapter and the section numbering in ANSI/IIAR 2. For example, section SPS 345.613 corresponds to subchapter 6 and to section 13 in ANSI/IIAR 2.

IIAR-2 Changes, Additions or Omissions

- **SPS 345.611 Over-pressure protection. (1) DISCHARGE CAPACITY OF PLATE HEAT EXHANGERS. This is a department alternative to the requirements in ANSI/IIAR 2 section 11.2.7: The minimum required relief device capacity for a plate heat exchanger based on an external heat addition scenario may be calculated in accordance with the following equation:**

$$C_{r,plate\ HX} = f \cdot \sqrt{L^2 + W^2} \cdot H$$

- **where:**

  Cr,plate HX **=** minimum required relief device capacity for the plate heat exchanger (lb/min of air)

  f **=** relief device capacity factor

  L **=** length of the plate pack (ft)

  W **=** width of the plate pack (ft)

  H **=** of the plate pack (ft)

IIAR-2 Changes, Additions or Omissions

- **(2) DISCHARGE PIPING FOR ATMOSPHERIC PRESSURE RELIEF. This is a department rule in addition to the requirements in ANSI/IIAR 2 section 11.3.6.1: Appendix A Tables A-3 may not be used for schedule 80 piping.**

IIAR-2 Changes, Additions or Omissions

- **SPS 345.613 Machinery room. (1)** EMERGENCY REMOTE CONTROLS**.** (a) *Ventilation.* Substitute the following wording for the requirements in ANSI/IIAR 2 section 13.2.1.4: Emergency remote controls for the mechanical means of ventilation shall be provided and be located immediately outside the machinery room, at the principal entrance to the room.
  - (b) *Compressors*. Substitute the following wording for the requirements in ANSI/IIAR 2 section 13.3.1.6: Emergency remote controls to stop the action of the refrigeration compressors shall be provided and be located immediately outside the machinery room, at the principal entrance to the room.
- **(2)** SIGNAGE. This is a department rule in addition to the requirements in ANSI/IIAR-2 section 13.3: A legible, easily accessible, permanent sign shall be securely attached to the mechanical refrigeration system, showing that the system was designed in accordance with ANSI/IIAR-2.

CHAPTER SPS 345
Mechanical Refrigeration

Subchapter VII — Ozone-Depleting Refrigerants

SPS 345.70 Ozone-depleting refrigerants.

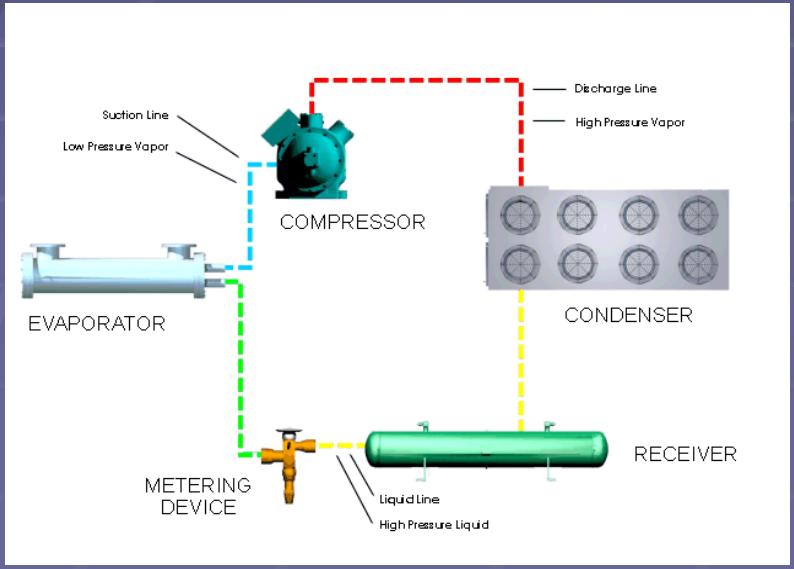
- **(1)** REQUIRED CERTIFICATION. Pursuant to s. 101.177 (2), Stats., no person may install or service a piece of refrigeration equipment that contains ozone-depleting refrigerant unless the person has been certified as a refrigerant handling technician in accordance with ch. SPS 305.
- **(2)** CLEANING OF EQUIPMENT. Ozone-depleting refrigerant may not be used for cleaning purposes, including the cleaning of interior or exterior surfaces of refrigeration equipment.
- **(3)** TRANSFERRING REFRIGERANT. Whenever ozone–depleting refrigerant is removed from refrigeration equipment, the ozone-depleting refrigerant shall be transferred to storage containers using equipment that is approved by the department. The department shall approve any transfer equipment if an approved nationally recognized testing laboratory has certified the equipment.

SPS 345.70 Ozone-depleting refrigerants.

- **(4)** RELEASING REFRIGERANT. Ozone-depleting refrigerant may not be knowingly or negligently released to the environment, except for minimal releases that occur as a result of efforts to recover, reclaim or recycle ozone-depleting refrigerant removed from refrigeration equipment.
- **(5)** ADDING REFRIGERANT. Before putting additional ozone-depleting refrigerant into refrigeration equipment, the refrigeration equipment shall be inspected and repaired if a leak is found or suspected. A yearly leak rate identified by the federal environmental protection agency shall be used to determine whether repairs are necessary.

8th Annual Boiler Industry Days
SPS 345
Presented by
Duane Leetch

18 & 19 April 2012



Q and A